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ON ENTERING SCHOOL

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THE CONTENTS OF

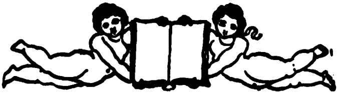
CHILDREN'S MINDS

ON ENTERING SCHOOL.

BY

G. STANLEY HALL,

PRESIDENT CLARK UNIVERSITY, WORCESTER, MASS.



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THE CONTENTS OF CHILDREN'S MINDS ON ENTERING SCHOOL.

Individuality of Children as Influenced by Surroundings.—In October, 1869, the Berlin Pedagogical *Verein* issued a circular inviting teachers to investigate the individuality of children on entering the city schools so far as it was represented by ideas of their environment. Individuality in children, it was said, differed in Berlin not only from that of children in smaller cities or in the country, but surroundings caused marked differences in culture-capacity in different wards. Although concepts from the environment were only one important cause of diversity of individuality, this cause once determined, inferences could be drawn to other causes.

How Concepts of City and Country Children Differ.—It was expected that, although city children would have an experience of moving things much larger than country children, they would have noticed very little of things at rest; that to names like *forest*, e.g., they, with an experience only with parks, would attach a very

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Vorstellungskreis der Berliner Kinder beim Eintritt in di
Schule. Berlin Städtisches Jahrbuch 1870.

different set of concepts from those of the country child. The fact that country children who entered city schools behind city children caught up with them so readily was due to the fact that early school methods as well as matter of instruction were better adapted to country children. Conversation with children in collecting the statistical materials would, it was predicted, tend to interesting and surprising results. When asked what mountain (Berg) they had ever seen, all the girls in an upper class of a grammar-school said *Pfefferberg*, the name of a beer-house near by; and, for all, *Berg* was a place of amusement. This would cause an entire group of geographical ideas to miscarry. Others, knowing the words *pond* or *lake* only from artificial ponds or lakes in the park, thought these words designated water holders, which might or might not have water in them. A preliminary survey showed that many children in each city school had never seen important monuments, squares, gardens, etc., near their own home and schoolhouse, and few knew the important features of their city at large. With the method of geographical instruction in vogue that begins with the most immediate surroundings and widens in concentric circles to city, county, fatherland, etc., these gaps in knowledge made havoc. School-walks and excursions, object-lesson material, as well as the subject-matter of reading, writing, etc., should be regulated by the results of such inquiry.

The Tests Wanting in Completeness and Accuracy.—This circular, which was accompanied by a list of points for inquiry, ended by invoking general and hearty *personal co-operation.* It was not sufficient to have seen a *hare, a squirrel, etc.,* but the hare must have been se *running wild, the sq* tree, sheep grazing, t stork on its nest, the swan swimming, chickens with the hen, the lark must be singing, the butterfly, snail, lark, etc., must be in a natural environment. The returns for 13 of the 84 schools of Berlin were worthless. Other tests suggested, but not reported on, were colors, knowledge of money, weights and measures ; how many have seen a soldier, sailor, peasant, Jew, Moor, or a shoemaker, carpenter, plasterer, watchmaker, printer, painter, etc., *at work ;* how many knew how bread was made out of grain ; where stockings came from ; how many could repeat correctly a spoken sentence, say a poem by heart, sing something, repeat a musical note, have attended a concert, have a cat, dog, or bird, etc. As an essential object of these inquiries was to distinguish the concepts which children brought to school from those acquired there, returns made some weeks or months after the children entered school had little value, yet were worked up with the rest. The very slight interest shown by teachers in making these inquiries was also remarked. As only about one third of a minute for each question to each child was the time taken, there could be no collateral questioning, so that confusion and misunderstanding no doubt invalidated many returns.

The Basis for the Following Tables 10,000 Children.—The sources of error to be constantly guarded against are errors in counting, imagination, or embarrassment of the children. When the answers were taken in class nearly twice as many children asserted knowledge of the concept as when they were taken in groups of 8 to 10. Nearly half the boys and more than half the *girls on* entering school had never seen to know b *name* any one of the following conspic ects

Berlin: Lustgarten, Unter den Linden, Wilhelm's Platz, Gensdarmenmarkt, or the Brandenburg Gate. From the large number of returns, those from 2238 children just entering school seem to have been pretty complete for 75 questions; but other returns were usable for a part of the questions, and some for other questions, so that in the tables the number of children is recorded on the uniform basis of 10,000. Arranged in the order of frequency, the first Berlin table is as follows:

✓ **What Number of Children Out of 10,000 have Various Ideas?**

1. Dwelling.	9026
2. Father's business,	8945
3. Name of father,	8517
4. Firmament,	8145
5 Tempest (day),	7873
6. Rainbow,	7770
7. Sphere,	7623
8. Two,	7435
9. Three,	7399
10. Four,	7265
11. Hail,	7015
12. Cube,	6957
13. Potato-field,	6323
14. Moon,	6215
15. Swan,	6175
16. Butterfly,	6028
17. Clouds,	5925
18. Fish,	5853
19. Unter den Linden,	5590
20. Menagerie,	5496
21. Square,	5474
22. Evening sky,	5384
23. Hasenheide,	5121
24. Frog,	5085
25. Circle,	4991
26. Snail,	4750
27. Sunset,	4625
28. Meadow,	4607
29. Alexander Sq.,	4366
30. Triangle,	4182
31. Corn-field,	4062
32. Zoölogical Gardens,	4075
33. Frederick's Grove,	3887
34. Herd of sheep,	3870
35. Pleasure Garden,	3861
36. Forest,	3646
37. City Hall,	3615
38. Morning sky,	3592
39. Squirrel,	3579
40. Brandenburg Gate,	3467
41. Kreuzberg,	3454
42. Castle of King,	3423
43. Village,	3374
44. Tempest (night),	3347
45. Mountain,	3248
46. Museum,	3222
47. Cuckoo,	3137
48. Treptow,	3065
49. Sunrise,	3052
50. Gensdarmenmarkt,	2909
51. Stork,	2887
52. Palace of King,	2886
53. Mushroom,	2855
54. Oak,	2641
55. Plough,	2636
56. Sleet,	2493
57. Moss,	2484
58. Hare,	2466
59. Stralau,	245
60. Harvest,	238
61. Dew,	23
62. Wilhelm's Platz,	2

63. Lake,	2078
64. Arsenal,	1957
65. Scotch fir,	1828
66. Lark,	1796
67. Reed,	1702
68. Willow,	1667
69. Whortleberry,	1640
70. Birch,	1318
71. Rummelsberg,	1242
72. Park for Invalids,	1135
73. River,	1122
74. Hazel shrub,	907
75. Botanical Garden,	527

Thus, e.g., out of 10,000 children, 9026 had the idea of dwellings, while but 527 had any idea of the Botanical Garden. The same returns otherwise presented are as follows:

Classification of above with Reference to Sex and Origin.

	Boys.	Girls.	Children from Families.	Children from Kinderg'n.	Children from Refuges.	Children alto-gether.
1. Two,	7478	7380	7436	8223	7113	7435
2. Three,	7478	7298	7418	7355	7344	7399
3. Four,	7279	7247	7224	8258	7067	7265
4. Triangle,	4274	4036	4078	5484	4111	4182
—5. Square,	5424	5537	5230	7484	5681	5474
6. Area of circle,	4750	5312	4818	6645	5081	4991
7. Sphere,	7684	7544	7576	8516	7483	7623
8. Cube,	6971	6970	6800	8064	7159	6957
9. Moon,	6043	6438	6067	8000	6144	6215
10. Sunrise,	3410	2590	3194	2710	2633	3052
11. Sunset,	4925	4237	4739	4516	4226	4635
12. Firmament,	8382	7840	8012	8645	8476	8145
13. Tempest (day),	7613	8209	7776	9226	7760	7873
14. Tempest(night),	3188	3509	3224	4194	3510	3347
15. Dew,	2331	2395	2455	2323	2032	2364
16. Clouds,	6090	5711	5727	6581	6443	5925
17. Hail,	6606	7544	7055	7677	6628	7015
18. Sleet,	2847	2037	2382	2194	3025	2493
19. Rainbow,	7708	7851	7667	9355	7598	7770
20. Evening sky,	5567	5148	5303	6065	5450	5384
21. Morning sky,	3497	3715	3545	4128	3580	3592
22. Hare,	2482	2446	2473	3097	2217	2466
23. Squirrel,	3878	3193	3170	4903	4665	3579
24. Stork,	3212	2467	2897	3290	2702	2887
25. Swan,	6757	5425	5976	7032	6628	6175
26. Cuckoo,	3545	2610	3048	4129	3118	3127
27. Lark,	2220	1249	1739	2258	184	

	Boys.	Girls.	Children from Families.	Children from Kinderg'n.	Children from Refuges.	Children alto-gether.
28. Frog, ...	5551	4482	4879	6323	5427	5085
29. Fish, ...	6852	4565	5691	6968	6074	5853
30. Butterfly, . .	7128	4606	5503	8258	7229	6028
31. Snail, ...	4877	4585	4612	5484	5012	4750
32. Birch, . . .	1531	1044	1339	1355	1229	1318
33. Scotch fir, . .	2205	1341	1770	2065	1963	1828
34. Oak, ...	2625	2661	2776	2451	2194	2641
35. Willow, . . .	2157	1034	1703	1742	1501	1667
36. Hazel shrub, .	1055	706	927	1032	762	907
37. Whortleberry, .	1792	1443	1564	2645	1570	1640
38. Sedge (reed), .	1840	1525	1655	2581	1570	1702
39. Mushroom, . .	3204	2405	2539	3419	2610	2855
40. Moss, ...	2688	2221	2867	3355	1963	2484
41. Pleasure Garden, . . .	4021	3654	3800	5032	3672	3861
42. Unter den Linden, . . .	6122	4993	5436	6129	5982	5590
43. Wilhelm's Platz, . . .	2696	1464	2345	1935	1524	2158
44. Alexander Platz, . . .	4084	4729	4515	3935	3946	4366
45. Gensdarmenmarkt, . . .	3450	2221	2915	3032	2841	2909
46. Brandenburg Gate, . . .	3885	2968	3388	4774	3303	3467
47. Castle, . . .	3465	3367	3333	4192	3510	3423
48. King's Palace, .	3180	2508	2788	3613	3002	2886
49. Museum, . .	3450	2927	2982	3935	3880	3222
50. Arsenal, . . .	2165	1689	1855	2839	2032	1957
51. City Hall, . .	3703	3501	3412	5935	3557	3615
52. Frederick's Grove, . . .	3600	4258	3915	2710	4203	3887
53. Menagerie, . .	5964	4893	5261	6516	6028	5496
54. Zoölogical G., .	4346	3685	3727	6323	4503	4057
55. Botanical G., .	452	624	497	1161	416	527
56. Kreuzberg, . .	4179	2518	3479	4065	3141	3454
57. Hasenheide, .	5780	4258	5121	6194	4734	5121
58. Park, ...	1301	922	964	1355	1709	1135
59. Treptow, . .	3196	2897	3127	4065	2469	3065
60. Stralau, . . .	2840	1955	2515	2387	2240	2453
61. Rummelsberg, .	1459	963	1248	903	1339	1242
62. Drove of sheep,	4005	3695	3739	4323	4203	3870
63. Corn-field, . .	*4322*	*3726*	4012	4194	4203	4062
64. Potato-field, .	*6265*	*6397*	6303	6323	6397	6323
65. Village, . . .	*3672*	*29*[illegible]	[illegible]	3419	3395	3374

	Boys.	Girls.	Children from Families.	Children from Kinderg'n.	Children from Refuges.	Children altogether.
66. Plough, . . .	3283	1801	2570	3290	2656	2636
67. Harvests, . .	2744	1883	2315	2323	2587	2368
68. Dwelling, . .	9120	8905	9103	9355	8612	9026
69. Name of father,	8136	9007	8830	8065	7483	8517
70. Position " .	8652	9324	9194	8968	7991	8945
71. Mountain, . .	3402	3050	3067	4645	3441	3248
72. Forest, . . .	4036	3142	3555	4194	3418	3646
73. Meadow, . .	5004	4096	4467	4645	5127	4607
74. Lake, . . .	2451	1586	2055	2000	2171	2078
75. River, . . .	1126	1115	1194	968	901	1122

✓ **Comparison of Concepts of Boys and Girls.**—This table shows that out of 10,000 boys 7478 on entering the Berlin schools have an idea of the number two; out of 10,000 girls 7380 have it; out of 10,000 children of both sexes, indiscriminately, 7436 have it, etc. Here the concepts are arranged in systematic order. Mathematics, 1–8; astronomical, 9–13; meteorological, 13–21; animals, 22–31; plants, 32–40; local geography, 41–61; and miscellaneous. Of three fourths of these concepts as objects more girls are ignorant than boys, and those who had not been in the kindergarten were more ignorant than those who had. Some of these objects were doubtless known, but had not acquired a name for the child; others they had seen, but had not had their attention called to. It is often said that girls are more likely to excel boys in learning concepts the more general these concepts are. Perhaps we may also assume that the most common concepts are acquired before those possessed by a few individuals only. The greater the number of concepts in the test-lists the more boys seemed to excel girls. The easy and widely *diffused concepts* are commonest among girls; the harder *and more* special or exceptional ones are commonest *among boys.* The girls clearly excelled only in the f *lowing* concepts: name and calling of the fat thunder-shower, rainbow, hail, potato-field, moon, square, circle, Alexander Square, Frederick's Woods, morning-red, oak, dew, and Botanical Garden. Of all the children the sphere was known to 76 per cent, the cube to 69 per cent, the square to 54 per cent, the circle to 49 per cent, the triangle to 41 per cent. The girls excel in space concepts and boys in numbers. Girls excel in ideas of family, house, and thunder-storms; children from houses of refuge had more concepts than children from families, and those from kindergartens excelled both. The child's characteristic question, "What is that?" is so poorly answered at home that he comes to school so poor in concepts that instruction must either operate with words, or use pictures, or go back to nature. Thus text-books and other means of instruction assume a knowledge which the child does not possess, and it is hard to find those well adapted to a given population. Thus object-lessons, excursions, etc., are suggested as first steps to fill the gaps in the child's knowledge.

Comparison between Knowledge of Bible and of Fairy Stories.—The following table shows the relative number of children who knew four Bible stories and four of Grimm's favorite fairy tales.

	Boys.	Girls.	From Families.	Kinder-garten.	Refuges.	All.	Per Cent. Boys.	Per Cent. Girls.
God, ...	7827	5067	6927	5935	5704	6633	60.7	39.3
Christ, ...	6757	4217	5818	5355	5104	5648	61.6	38.4
Bible stories, .	3743	1453	2727	2258	2979	2744	72	28
Prayers and Songs, ...	5400	4647	5078	5613	4850	5041	53.7	46.6
Schneewittchen,	2173	3009	2436	4387	2263	2538	41.9	58.1
Rothkäppchen, .	2427	3664	2800	4581	3025	2967	39.8	60.2
Dornröschen, .	*563*	*1044*	661	1871	808	773	35	65
Aschenbrödel, .	*1784*	*2897*	2182	3871	2032	2270	38	
Average.								
Religious, . . .	*5852*	*3846*	5138	4790	4659	5021	60.	
Fairy tales, . . .	*1734*	*2654*	2020	3677	2032	2137	39.	

Thus girls excel in fairy tales and boys in religious concepts. As the opportunities to learn both would not probably differ much, there seems here a difference of disposition. God and Christ were better learned at home and the tales best in the kindergarten. Rothkäppchen was better known than God, and Schneewittchen than Christ.

Other Comparisons.—More boys could repeat sentences said to them, or sing musical phrases sung to them, or sing a song, than girls. Kindergarten children came from the richer, refuge children from the poorer class, while parents between these extremes occupy themselves most with their children. The better off the parents the stiller and less imitative the child, is a law suggested by the statistics of abilities. Not only method, but choice and arrangement of the material of instruction, depend on the knowledge the child has. Further investigations on narrower and more closely related subjects should be chosen. Six to twelve closely related points is suggested as the best method, and every teacher could occasionally complete such inventories in his or her room.

How the Locality of a School in Germany Affects the Instruction.—In Germany it is more common than in our country to connect songs, poetry, reading and object-lessons, instruction in history, geography, botany, geology, and other elementary branches with the immediate locality. A school geography of Leipzig, e.g., begins with the schoolhouse and yard, the street, with cross-sections of it to show drainage, gas, etc., and then widens out into the world by concentric circles. Stated holiday walks conducted by teachers for educational purposes and for making collections for the school-room more common. The psychic peculiarities of d school districts of Berlin seemed to be influenced surprisingly by locality.

Lange's Conclusions from Similar Experiments.—In 1879 Dr. K. Lange urged that a six-years child has learned already far more than a student learns in his entire university course. "These six years have been full of advancement like the six days of creation." ✓Concrete conceptions have been accumulated in vast numbers and the teacher must not assume that a *tabula rasa* is before him. Both this and the presumption of too much knowledge would be to build upon sand. Children have experienced and learned far more than they can put into words; hence again the need of cross-questioning.* Lange's table below was based on 500 children entering the city schools of Plauen, and 300 entering 21 country schools in outlying districts, and the figures represent the per cents of those having the concept.

Questions or Concept.	City Children.	Country Children.
1. Seen the sun rise,	18	42
2. Seen the sun set,	23	58
3. Seen the moon and stars,	84	82
4. Seen and heard lark,	20	70
5. Fish swimming wild,	72	83
6. Been to a pond,	51	86
7. Been to a brook or river,	71	82
8. Been on high hill or mountain,	48	74
9. Been in a forest,	63	86
10. Knows an oak,	18	57
11. Seen a corn or wheat field,	64	92
12. Knows how bread comes from grain,	28	63
13. Seen a shoemaker at work,	79	80
14. Seen a carpenter at work,	55	62
15. Seen a mason at work,	86	92
16. Been in a church,	50	49
17. Knows aught of the dear God,	51	66

See Der Vorstellungskreis unserer sechsjährigen Kleinen. Schul-Zeitung. Jena, 1879, p. 327 *et seq.*

Only 43 per cent of the city children had ever been to any other town or village, only 18 per cent had seen the castle near by, and knowledge of colors was as follows, beginning with those best known and ending with the least known: black, white, red, green, blue, yellow. The ignorance of city children shows the utility of school excursions. Girls had seen, heard, and experienced less than boys of all the seventeen subjects of inquiry save the "dear God," of whom they knew more than the boys. Little is told of Lange's methods, or whether or how far they led to a modification of the elementary curriculum.

Conditions of the Experiment in Boston.—It was with the advantages of many suggestions and not a few warnings from these attempts that the writer undertook, soon after the opening of the Boston schools in September, 1880, to make out a list of questions suitable for obtaining an inventory of the contents of the minds of children of average intelligence on entering the primary schools of that city. This was made possible by the liberality of Mrs. Quincy Shaw, who detailed four excellent teachers from her comprehensive system of kindergartens to act as special questioners under the writer's direction, and by the co-operation of Miss L. B. Pingree, their superintendent. All the local and many other of the German questions were not suitable to children here; and the task of selecting those that should be so, though perhaps not involving quite so many perplexing considerations as choosing an equally long list of "normal words," was by no means easy. They must not be too familiar nor too hard and remote, *but must give* free and easy play to thought and memory. *But especially*, to yield most practical results, th should lie within the range of what children are commonly supposed or at least desired or expected, by teachers and by those who write primary text-books and prescribe courses of instruction, to know. Many preliminary half-days of questioning small groups of children and receiving suggestions from many sources, and the use of many primers, object-lesson courses, etc., now in use in this country, were necessary before the first provisional list of one hundred and thirty-four questions was printed. The problem first had in mind was strictly practical; viz., what may Boston children be, by their teachers, assumed to know and have seen when they enter school; although other purposes more psychological shaped other questions used later.

What the Sources of Errors are in such Tests.—The difficulties and sources of possible error in the use of such questions are many. Not only are children prone to imitate others in their answers without stopping to think and give an independent answer of their own, but they often love to seem wise, and, to make themselves interesting, state what seems to interest us without reference to truth, divining the lines of our interest with a subtlety we do not suspect: if absurdities are doubted by the questioner, they are sometimes only the more protested by the children; the faculties of some are benumbed and perhaps their tongues tied by bashfulness, while others are careless, listless, inattentive, and answer at random. Again, many questioners are brusque, lacking in sympathy or tact, or real interest or patience in the work, or perhaps regard it as trivial or fruitless. These and many other difficulties seemed t minimized by the following method, which was lly settled upon, and, with the co-operation of Mr. E.

P. Seaver, superintendent of the Boston schools, put into operation.

Means taken to Obtain the Exact Facts concerning Children's Ideas.—The four trained and experienced kindergarten teachers were employed by the hour to question three children at a time in the dressing-room of the school by themselves alone, so as not to interrupt the school-work. No constraint was used, and, as several hours were necessary to finish each set, changes and rests were often needful, while by frequent correspondence and by meetings with the writer to discuss details and compare results uniformity of method was sought. The most honest and unembarrassed child's first answer to a direct question, e.g., whether it has seen a cow, sheep, etc., must rarely or never be taken without careful cross-questioning—a stated method of which was developed respecting many objects. If the child says it has seen a cow, but when asked its size points to its own finger-nail or hand and says, *so big*, as not unfrequently occurs, the inference is that it has at most only seen a picture of a cow, and thinks its size reproduced therein, and accordingly he is set down as deficient on that question. If, however, he is correct in size, but calls the color blue, does not know it as the source of milk, or that it has horns or hoofs,—several errors of the latter order were allowed. A worm may be said to *swim* on the ground, butchers to kill only the bad animals, etc.; but when hams are said to grow on trees or in the ground, or a hill is described as a *lump* of dirt or wool as growing on hens, as sometimes occurs, deficiency is obvious. Thus many other visual and other notions that seem to adults so simple that they must present to the mind with some completeness or not at all, are in a process of gradual acquisition, element by element, in the mind of a child, so that there must sometimes be confessedly a certain degree of arbitrariness in saying, as, except in cases of peculiar uncertainty, the questioners attempted to do, that the child has the concept or does not have it. Men's first names seemed to have designated single striking qualities; but, once applied, they become general or specific names according to circumstances. Again, very few children knew that a tree has bark, leaves, trunk, and roots; but very few indeed had not noticed a tree enough for our "pass." Without specifying further details, it may suffice here to say that the child was given the benefit of every doubt and credited with knowledge wherever its ignorance was not so radical as to make a chaos of what instruction and most primary text-books are wont to assume. It is important also to add that the questioners were requested to report manifest gaps in the child's knowledge *in its own words*, reproducing its syntax, pronunciation, etc.

200 Average Children the Basis of the Following Tables.—About sixty teachers besides the four examiners made returns from three or more children each. Many of their returns, however, are incomplete, careless, or show internal contradictions, and can be used only indirectly to control results from the other sources. From more than twice that number two hundred of the Boston children were selected as the basis of the following table. For certain questions and for many statistical purposes this number is much too small to yield very valuable results; but where, as in the majority of cases the averages of these children taken by fifties have varied less than ten per cent, it is safe to infer that the figures have considerable representative worth and far more than they could have if the percentage was small. The precautions that were taken to avoid schools where the children come from homes representing extremes of either culture or ignorance, or to balance deviations from a preliminary conjecture averaged in one direction by like deviations in the other, and also to select from each school-room with the teacher's aid only children of average capacity and to dismiss each child found unresponsive or not acquainted with the English language, give to the percentages, it is believed, a worth which without these and other precautions to this end only far larger numbers could yield.

Percentage of Ignorance Given.—The following table shows the general results for a number of those questions which admit of categorical answers, only negative results being recorded; the italicized questions in the "miscellaneous" class being based on only from forty to seventy-five children, the rest on two hundred, or, in a few cases, on two hundred and fifty.

Tests Made upon 678 Children in Kansas City.—In 1883, shortly after my own tables, as below, were published, Superintendent I. M. Greenwood, of Kansas City, tested 678 children of the lowest primary class in that city, of whom 47 were colored, with some of my questions. I here print his percentages in the last two columns. In his State children are admitted to school at six; but his tests were made in March, April, May, or after some seven months more of school life, and probably at greater age.

Comparison of Boston and Kansas City Results.

NAME OF THE OBJECT OF CONCEPTION.	PER CENT OF CHILDREN IGNORANT OF IT.		
	In Boston.	In Kansas City.	
		White.	Colored.
Beehive,	80	59.4	66
Crow,	77	47.3	59
Bluebird,	72.5		
Ant,	65.5	21.5	19.1
Squirrel,	63	15	4.2
Snail,	62		
Robin,	60.5	30.6	10.6
Sparrow,	57.5		
Sheep,	54	3.5	
Bee,	52	7.27	4.2
Frog,	50	2.7	
Pig,	47.5	1.7	
Chicken,	33.5	.5	
Worm,	22	.5	
Butterfly,	20.5	.5	
Hen,	19	.1	
Cow,	18.5	5.2	
Growing wheat,	92.5	23.4	66
Elm-tree,	91.5	52.4	89.8
Poplar-tree,	89		
Willow,	89		
Growing oats,	87.5		
Oak-tree,	87	62.2	58.6
Pine,	87	65.6	87.2
Maple,	83	31.2	80.8
Growing moss,	81.5	30.7	42.5
" strawberries,	78.5	26.5	1.1
" clover,	74		
" beans,	71.5		
" blueberries,	67.5		
" blackberries,	66		
" corn,	65.5		
Chestnut-tree,	64		
Planted a seed,	63		
Peaches on a tree,	61		
Growing potatoes,	61		
" buttercup,	55.5		
" rose,	54		
" grapes,	53		
dandelion,	52		

Name of the Object of Conception.	Per Cent of Children Ignorant of It.		
	In Boston.	In Kansas City.	
		White.	Colored.
Growing cherries,	46		
“ pears,	32		
“ apples,	21		
Where are the child's ribs,	90.5	13.6	6.4
“ “ “ lungs,	81	26	44.6
“ “ “ heart,	80	18.5	18.1
“ “ “ wrist,	70.5	3	
“ “ ankles,	65.5	14.1	
“ “ waist,	52.5	14	4.2
“ “ hips,	45	14	4.2
“ “ knuckles,	36	2.9	8.5
“ “ elbows,	25	1.5	
Knows right and left hand,	21.5	1	10.2
“ cheek,	18.5	.5	
“ forehead,	15	.5	
“ throat,	13.5	1.1	
“ knee,	7	1.6	
“ stomach,	6	27.2	45.9
Dew,	78	39.1	70.2
What season it is,	75.5	31.8	56.1
Seen hail,	73	13.6	18.1
“ rainbow,	65	10.3	2.1
“ sunrise,	56.5	16.6	
“ sunset,	53.5	19.5	
“ clouds,	35	7.3	
“ stars,	14	3	
“ moon,	7	26	53
Conception of an island,	87.5		
“ “ a beach,	55.5		
“ “ woods,	53.5		
“ “ river,	48		
“ “ pond,	40		
“ “ hill,	28		
“ “ brook,	15		
“ “ triangle,	92		
“ “ square,	56		
“ “ circle,	35		
The number five,	28.5		
“ “ four,	17		
“ “ three,	8		

NAME OF THE OBJECT OF CONCEPTION.	PER CENT OF CHILDREN IGNORANT OF IT.		
	In Boston.	In Kansas City.	
		White.	Colored.
Seen watchmaker at work,	68	30.1	49.7
“ file,	65	20.8	36.1
“ plough,	64.5	13.9	8.5
“ spade,	62	7.3	15
“ hoe,	61	5	10.6
“ bricklayer at work,	44.5	10.1	2.1
“ shoemaker at work,	25	8.7	
“ axe,	12	18.4	53
Knows green by name,	15		
“ blue by name,	14		
“ yellow by name,	13.5		
“ red by name,	9		
That leathern things come from animals,	93.4	50.8	72.3
Maxim or proverb,	91.5		
Origin of cotton things,	90	35.7	15
What flour is made of,	89	34.7	57.4
Ability to knit,	88		
What bricks are made of,	81.1	33.1	53
Shape of the world,	70.3	46	47
Origin of woollen things,	69	55	44
Never attended kindergarten,	67.5		
Never been in bathing,	64.5	13.4	
Can tell no rudiment of a story,	58	23.6	12.7
Not know wooden things are from trees,	55	19.3	6.4
Origin of butter,	50.5	6.7	
Origin of meat (from animals),	48	8.3	12.7
Cannot sew,	47.5	23.4	
Cannot strike a given musical tone,	40		
Cannot beat time regularly,	39		
Have never saved cents at home,	36	8.2	12.7
Never been in the country,	35.5	13.1	19
Can repeat no verse,	28	20	42.5
Source of milk,	20.5	4	

Classification with Reference to Sex and Nationality.

NAME OF THE OBJECT OF CONCEPT.	Per Cent of Ignorance in 150 Girls.	Per Cent of Ignorance in 150 Boys.	Per Cent of Ignorance in 50 Irish Children.	Per Cent of Ignorance in 50 American Children.	Per Cent of Ignorance in 64 kindergarten Children.
Beehive,	81	75	86	70	61
Ant,	59	60	74	38	26
Squirrel,	69	50	66	42	43
Snail,	69	73	92	72	62
Robin,	69	44	64	36	29
Sheep,	67	47	62	40	40
Bee,	46	32	52	32	26
Frog,	53	38	54	35	35
Pig,	45	27	38	26	22
Chicken,	35	21	32	16	22
Worm,	21	17	26	16	9
Butterfly,	14	16	26	8	9
Hen,	15	14	18	2	14
Cow,	18	12	20	6	10
Growing clover,	59	68	84	42	29
" corn,	58	50	60	68	32
" potatoes,	55	54	62	44	34
" buttercup,	50	51	66	40	31
" rose,	48	48	60	42	33
" dandelion,	44	42	62	34	31
" apples,	16	16	18	12	5
Ribs,	88	92	98	82	68
Ankles,	58	52	62	40	38
Waist,	53	52	64	32	36
Hips,	50	47	72	31	24
Knuckles,	27	27	34	12	23
Elbow,	19	32	36	16	12
Right from left hand,	20	8	14	20	4
Wrist,	21	34	44	9	19
Cheek,	10	12	14	14	4
Forehead,	10	11	12	10	7
Throat,	10	18	14	16	14
Knee,	4	5	2	10	2
Dew,	64	63	92	52	57
What season it is,	59	50	68	48	41
Hail,	75	61	84	52	53
Rainbow,	59	61	70	38	38

NAME OF THE OBJECT OF CONCEPT.	Per Cent of Ignorance in 150 Girls.	Per Cent of Ignorance in 150 Boys.	Per Cent of Ignorance in 50 Irish Children.	Per Cent of Ignorance in 50 American Children.
Sunrise,	71	53	70	36
Sunset,	47	49	52	32
Star,	15	10	12	4
Island,	74	78	84	64
Beach,	82	49	60	34
Woods,	46	36	46	32
River,	38	44	62	12
Pond,	31	34	42	24
Hill,	23	22	30	12
The number five,	26	16	22	24
" " four,	15	10	16	14
" " three,	7	6	12	8

What Children were Examined in Boston.—Th
Boston table is based upon about equal numbers o
and girls, and children of Irish and American pare
greatly predominate. There are 21 Germans, and
divided between 8 other nationalities; 14 per cent
examined did not know their age; 6 per cent were
37 per cent were five, 25 per cent were six, 12 pe
were seven, and 2 per cent were eight years old.
returns were carefully tabulated to determine the
ence of age, which seems surprisingly unprono
indicating, so far as the small numbers go, a slight
of age *per se* as an index of ripeness for school.

**The Returns Indicate Little Difference betwee
Sexes.**—In the second table which is based on
children, only columns 2 and 3 are based upon
numbers, and upon less carefully restricted sele
from the aggregate returns. In 34 representative
tions out of 49 the boys surpass the girls, as the G
ys did in 75 per cent of the Berlin questions.
s excel in knowledge of the parts of the bod

and family life, thunder, rainbows, in knowledge of square, circle, and triangle, but not in that of cube, sphere, and pyramid, which is harder and later. Their stories are more imaginative, while their knowledge of things outward and remote, their power to sing and articulate correctly from dictation, their acquaintance with number and animals, is distinctly less than that of the boys. The Berlin report infers that the more common, near, or easy a notion is the more likely are the girls to excel the boys, and *vice versa*. Save possibly in the knowledge of the parts of the body, our returns do not indicate difference between the sexes. Boys do seem, however, more likely than girls to be ignorant of common things right about them;. where knowledge is wont to be assumed. Column 5 shows that the Irish children tested were behind others on nearly all topics. The Irish girls decidely outrank the Irish boys, the advantage to the sex being outweighed by the wider knowledge of the boys of other nationalities. Whether, however, the five and six-year old Irish boys are not after all so constituted as to surpass their precocious American playmates later in school or adult life, as since Sigismund many think "slow" children generally do, is one of the most serious questions for the philosophical educator.

The Advantage of the Kindergarten Shown.—Column 6 shows in a striking way the advantage of the kindergarten children, without regard to nationality, over all others. Most of the latter tested were from the charity kindergartens, so that superior intelligence of home surroundings can hardly be assumed. Many of them had *attended* kindergarten but a short time, and the questions were so ordered that the questioners who had special interest in the kindergarten should not know till near the end of their tests whether or not they had ever attended it. On the other hand, a somewhat larger proportion of the children from the kindergarten had been in the country. Yet on the whole we seem to have here an illustration of the law that we really see not what is near or impresses the retina, but what the attention is called and held to, and what interests are awakened and words found for. Of nearly thirty primary teachers questioned as to the difference between children from kindergartens and others, four saw no difference, and all the rest thought them better fitted for school-work, instancing superior use of language, skill with the hand and slate, quickness, power of observation, singing, number, love of work, neatness, politeness, freedom from the benumbing school-bashfulness, or power to draw from dictation. Many thought them at first more restless and talkative.

Important Educational Conclusions may be Derived.—There are many other details and more or less probable inferences, but the above are the chief. The work was laborious, involving about fifty thousand items in all. These results are, it is believed, to be in some degree the first opening of a field which should be specialized, and in which single concept-groups should be subjected to more detailed study with larger numbers of children. One difficulty is to get essential points to test for. If these are not characteristic and typical, all such work is worthless. We believe that not only practical educational conclusions of great scope and importance may be based on or illustrated by such results, but, though many *ces of inaccuracy* may limit their value, that they *great importance* for anthropology and psycholog

It is characteristic of an educated man, says Aristotle in substance, not to require a degree of scientific exactness on any subject greater than that which the subject admits. As scientific methods advance, not only are increasingly complex matters subjected to them, but probabilities (which guide nearly all our acts) more and more remote from mathematical certainty are valued.

Knowledge of Children's Ideas Essential as Basis of Right Instruction.—Steinthal tells an opposite story of six German gentlemen riding socially in a coupé all day, and as they approached the station where they were to separate, one proposed to tell the vocation of each of the others, who were strangers to him, if they would write without hesitation an answer to the question, "What destroys its own offspring?" One wrote, Vital force. "You," said the questioner, "are a biologist." Another wrote, War. "You," he said, "are a soldier." Another wrote, Kronos, and was correctly pronounced a philologist; while the publicist revealed himself by writing, Revolution, and the farmer by writing, She-bear. This fable teaches the law of apperception. As Don Quixote saw an army in a flock of sheep and a giant in a windmill, as some see all things in the light of politics, others in that of religion, education, etc., so the Aryan races apperceived the clouds as cows and the rain as their milk, the sun as a horse, the lightning as an arrow; and so the children apperceive rain as God pouring down water; thunder as barrels, boards falling, or cannon; heaven as a well-appointed nursery, etc. They bring more or less developed apperceiving organs with them into school, each older and more familiar con
ing more apperceptive power over the new
and percepts by use. The older impressio

lurch, as it were, for the new ones, and mental freedom and all-sideness depend on the number and strength of these appropriating concepts. If there are very few, as with children, teaching is like pouring water from a big tub into a small narrow-necked bottle. A teacher who acts upon the now everywhere admitted fallacy that knowledge of the subject is all that is needed in teaching children pours at random onto more than into the children, talking to rather than with them, and gauging what he gives rather than what they receive. All now agree that the mind can learn only what is related to other things learned before, and that we must start from the knowledge that the children really have and develop this as germs, otherwise we are showing objects that require close scrutiny only to indirect vision, or talking to the blind about color. Alas for the teacher who does not learn more from his children than he can ever hope to teach them! Just in proportion as teachers do this do they cease to be merely mechanical, and acquire interest, perhaps enthusiasm, and surely an all-compensating sense of growth, in their work and life.

Four Inferences from above Tables.—From the above tables it seems not too much also to infer—I. That there is next to nothing of pedagogic value the knowledge of which it is safe to assume at the outset of school-life. Hence the need of objects and the danger of books and word-cram. Hence many of the best primary teachers in Germany spend from two to four or even six months in talking of objects and drawing them before any beginning of what we till lately have regarded as primary-school work. II. The best preparation parents can give *their children for* good school-training is to make them *acquainted with* natural objects, especially with the sights and sounds of the country, and to send them to good and hygienic, as distinct from the most fashionable, kindergartens. III. Every teacher on starting with a new class or in a new locality, to make sure that his efforts along some lines are not utterly lost, should undertake to explore carefully section by section children's minds with all the tact and ingenuity he can command and acquire, to determine exactly what is already shown; and every normal-school pupil should undertake work of the same kind as an essential part of his training. IV. The concepts that are most common in the children of a given locality are the earliest to be acquired, while the rarer ones are later. This order may in teaching generally be assumed as a natural one, e.g., apples first and wheat last (cf. the first Boston table above). This order, however, varies very greatly with every change of environment, so that the results of explorations of children's minds in one place cannot be assumed to be valid for those of another save within comparatively few concept-spheres.

The Common Notion of what Children Know Erroneous.—The high rate of ignorance indicated in the table may surprise most persons who will be likely to read this report, because the childhood they know will be much above the average of intelligence here sought, and because the few memories of childhood which survive in adult life necessarily bear but slight traces of imperfections, and are from many causes illusory. Skeins and spools of thread were said to grow on the sheep's back or on bushes, stockings on trees, butter to come from buttercups, flour to be made of beans, oats to grow on oaks, bread to be swelled yeast, trees to be stuck in the ground by God and to be re be dug from the ground, and potatoes to be picked from the trees. Cheese is squeezed butter, the cow says "bow-wow," the pig purrs or burrows, worms are not distinguished from snakes, moss from the "toad's umbrella," bricks from stones, etc. An oak may be known only as an acorn-tree or a button-tree, a pine only as a needle-tree, a bird's nest only as its bed, etc. So that while no one child has all these misconceptions, none are free from them, and thus the liabilities are great that, in this chaos of half-assimilated impressions, half-right, half-wrong, some lost link may make utter nonsense or mere verbal cram of the most careful instruction, as in the cases of children referred to above who knew much by rote about a cow, its milk, horns, leather, meat, etc., but yet were sure from the picture-book that it was no bigger than a small mouse.

City Life is Unnatural.—For 86 per cent of the above questions the average intelligence of thirty-six country children who were tested ranks higher than that of the city children of the table, and in many items very greatly. The subject-matter of primers for the latter is in great part still traditionally of country life; hence the danger of unwarranted presupposition is considerable. As our methods of teaching grow natural we realize that city life is unnatural, and that those who grow up without knowing the country are defrauded of that without which childhood can never be complete or normal. On the whole, the material of the city is no doubt inferior in pedagogic value to country experience. A few days in the country at this age has raised the level of many a city child's intelligence more than a term or two of school-training could do without it. It is there, too, that the foundations of a love of natural science are best laid.

Country Life and Sights Have a Greater Educational Value.—We cannot accept without many careful qualifications the evolutionary dictum that the child's mental development should repeat that of the race. Unlike primitive man, the child has a feeble body, and is ever influenced by a higher culture about him. Yet from the primeval intimacy with the qualities and habits of plants, with the instincts of animals—so like those of children—with which hawking and trapping, the riding on instead of some distance behind horses, etc., made men familiar; from primitive industries and tools as first freshly suggested, if we believe Geiger, from the normal activities of the human organism, especially of the tool of tools, the hand; from primitive shelter, cooking and clothing, with which anthropological researches make us familiar, it is certain that not a few educational elements of great value can be selected and systematized for children—an increasing number of them in fact being already in use for juvenile games and recreations and for the vacation pastimes of adults. A country-barn, a forest with its gloom and awe, its vague fears and indefinite sounds, is a great school at this age. The making of butter, of which some teachers, after hearing so often that it grew inside eggs, or on ice, or was made from buttermilk, think it worth while to make a thimbleful in a toy churn at school as an object-lesson; more acquaintance with birds, which, as having the most perfect senses, most constant motion in several elements, even Leopardi could panegyrize as the only *real things* of joy in the universe, and whi [illegible] strange *power of flight* makes ideal beings wi [illegible] whose nests were sometimes said to *grow* on trees; more knowledge of kitchen-chemistry, of foods, their preparation and origin; wide prospects for the eyes—these elements constitute a more pedagogic industrial training for *young* children, because more free and play-like, than sewing, or cooking, or whittling, or special trade-schools can, and are besides more hygienic.

What Advantages the City Child Has, and what He Lacks.—Many children locate all that is good and imperfectly known in the country, and nearly a dozen volunteered the statement that good people when they die go to the country—even from Boston. It is things that live, and, as it were, detach themselves from their background by moving that catch the eye and with it the attention, and the subjects which occupy and interest the city child are mainly in motion and therefore transient, while the country child comes to know objects at rest better. The country child has more solitude, is likely to develop more independence, and is less likely to be prematurely caught up into the absorbing activities and throbbing passions of manhood, and becomes more familiar with the experiences of primitive man. The city child knows a little of many more things, and so is more liable to superficiality, and has a wider field of error. At the same time it has two great advantages over the country child, in knowing more of human nature and in entering school with a much better developed sense of rhythm, and all its important implications. On the whole, however, additional force seems thus given to the argument for excursions, by rail or otherwise, regularly provided for the poorer children who are causing the race to degenerate in t great centres of population, unfavorable enough for those with good homes or even for adults.

Words often Produce Distorted Ideas through Resemblance in Sound.—Words, in connection with rhyme, rhythm, alliteration, cadence, etc., or even without these, simply as sound-pictures, often absorb the attention of children, and yield them a really æsthetic pleasure either quite independently of their meaning or to the utter bewilderment of it. They hear fancied words in noises and sounds of nature and animals, and are persistent punners. As butterflies make butter or eat it or give it by squeezing, so grasshoppers give grass, bees give beads and beans, kittens grow on the pussy-willow, and all honey is from honeysuckles, and even a poplin dress is made of poplar-trees. When the cow lows it somehow blows its own horn; crows and scarecrows are confounded; ant has some subtle relationship to aunt; angle-worm suggests angle, or triangle, or ankle; Martie eats "tomarties;" a holiday is a day to "holler" on; Harry O'Neil is nicknamed Harry Oatmeal; isosceles is somehow related to sausages; October suggests knocked over; "I never saw a hawk, but I can hawk and spit too;" "I will not sing do re mi, but do re *you*;" "Miss Eaton will eat us"—these and many more from the questioners' notes; the story of the child who, puzzled by the unfamiliar reflexive use of the verb, came to associate "Now I lay me," etc., with a *lama*; of the child who wondered what kind of a bear was the consecrated cross-eyed bear as he understood the hymn "The consecrated cross I'd bear;" or of another who was for years stultified as *against a* dead blank wall whenever the phrase "answer *sought*" occurred, suggest to us how, more or less consciously and more or less seriously, a child may be led, in the absence of corrective experience, to the most fantastic and otherwise unaccountable distortions of facts by shadowy word-spectres or husks.

Danger that Knowledge May be Verbal Rather than Real.—In many of the expressions quoted the child seems playing with relations once seriously held, and its "fun" to be joy over but lately broken mental fetters. Some at least of the not infrequently quite unintelligible statements or answers may perhaps be thus accounted for. Again, the child more than the adult thinks in pictures, gestures, and inarticulate sounds. The distinction between real and verbal knowledge has been carefully and constantly kept in mind by the questioners. Yet of the objects in the above table, except a very few, like triangle and sparrow, a child may be said to know almost nothing, at least for school purposes, if he has no generally recognized name for them. The far greater danger is the converse, that only the name and not the thing itself will be known. To test for this danger was, with the exceptions presently to be noted, our constant aim, as it is that of true education to obviate it. The danger, however, is after all quite limited here; for the linguistic imperfections of children are far more often shown in combining words than in naming the concrete things they know or do not know. To name an object is a passion with them, for it is to put their own mark upon it, to appropriate it. From the talk which most children hear and use to book language is again an immense step. Words *live* only in the ear and mouth, and are pale and corpse-like when *addressed to the eye.* What we want, and indeed are *likely soon to* [illegible] are car [illegible] ged child vocabu laries and dictionaries of both verbal forms and meanings, to show teachers just the phonic elements and vocal combinations children have most trouble with,—the words they most readily and surely acquire, their number and order in each thought-sphere,—and the attributes and connotations most liable to confuse them. To that work it is believed the method here employed has already furnished valuable material in protocol, soon to be augmented and digested.

The Color Test Designed to Determine Power of Using Color-names.—To specify a few items more fully, the four color-questions were designed to test, not color-blindness, but the power to use color-names. The Holmgren worsteds were used, from which the child was asked to pick out, not colors like others to which its attention is directed without naming them, but the color named, to which he has no clue but the name. It did not seem safe to complicate the objects of the latter educational test with the former, so that some of those marked defective in the table may or may not have been color-blind. Excluding colored and Jewish children, both of whom seem to show exceptional percentages, and averaging the sexes, both Magnus and Jeffries found a little over two per cent of many thousand children color-blind. The children they tested, however, were much older than these; and two or three hundred is far too small a number to warrant us, were it otherwise allowable, in simply subtracting two per cent and inferring that the remainder were deficient only in knowledge of the color-word. Our figures, *then, do not* bear upon the question whether the color-*sense itself* is fully developed before the age of five or *six or not.*

Also in Number Tests, the Number-name was Sought.—Again, number cannot be developed to any practical extent without knowledge of the number-name. Moreover, as Wundt's careful experiments show, the eye can apprehend but three of the smallest and simplest objects, unless they are arranged in some geometrical order, without taking additional time to count. As the chromatic scale grades musical intervals, or the names we count by graduate the vague sense of more or less, and later, as visible notes change all musical ideas and possibilities, so figures or number-signs almost create arithmetic. A child who seriously says a cat has three or five legs will pick out its own, e.g., the fourth seat in the fifth row in an empty school-room almost every time by happy guessing, and hold up "so many" fingers or blocks, when, if the number-name five or six were called for and nothing shown, it would be quite confused. In our tests the number-name was sought, because it is that which is mainly serviceable for educational purposes.

Physical Self-consciousness and Knowledge of the Earth Small.—As to the physiological and geographical questions little need be said. Joint, flesh, and vein are often unknown terms, or joint is where the bone is broken, and there are stones in the knees. Within the skin is blood and something hard, perhaps wood. Physical self-consciousness, which is in little danger of becoming morbid at this age, begins with recognition of the hand, then of the foot, because these are the most mobile parts, but has not often reached the face at this age, and blushing is rare; while psychic self-consciousness is commonly only of pain, either internal, as of stomach-ache, or peripheral, of cuts, bruises, etc. The world is square, straight, or flat, and if the other side h [illegible] hought of it is all woods or water or ice, or where saved people or Protestants, or anything much heard of but little seen, are; if we go to the edge of the world we come to water or may fall off, or it may be like a house and we live on top. The first notion of a hill may be of some particular pile of sand, perhaps on the moulding-board, three inches high, or a rubbish-heap in the back-yard, or a slant where a sled will run alone; but a comprehensive idea of hill with opposite sides, though simpler and easier than most geographical categories, is by no means to be assumed.

There is a Region of Fancy in Children's Minds Hard to be Reached.—If children are pressed to answer questions somewhat beyond their ken, they often reply confusedly and at random, while if others beside them are questioned they can answer well; some are bolder and invent things on the spot if they seem to interest the questioner, while others catch quick subtle suggestions from the form of the question, accent, gesture, feature, etc., so that what seems originality is really mind-reading, giving back our very thought, and is sometimes only a direct reproduction, with but little distortion, because little apprehension, of what parents or teachers have lately told them. But there are certain elements which every tactful and experienced friend of children learns to distinguish from each of these with considerable accuracy—elements which, from whatever source, spring from deep roots in the childish heart, as distinct form all these as are Grimm's tales from those of some of our weakly juvenile weeklies. These are generally not easily accessible. I could not persuade an old nurse to repeat to me a nonsensical song I half-overheard that delighted a two-year-old *child, and the* brothers Grimm experienced a similar difficulty in making their collections. As many workingme nail a horseshoe over their door for luck, and many people really prefer to begin nothing important on Friday, who will not confess to a trace of superstition in either case, so children cling to their "old credulities to nature dear," refusing every attempt to gain their full confidence or explore secret tracts in their minds, as a well-developed system of insane illusions may escape the scrutiny of the most skilful alienist. As a reasoning electric light might honestly doubt the existence of such things as shadows, because, however near or numerous, they are always hidden from it, so the most intelligent adults quite commonly fail to recognize sides of their own children's souls which can be seen only by strategy. A boy and girl often play under my window as I write, and when either is quite alone unconscious words often reveal what is passing in their own minds, and it is often very absurd or else meaningless, but they run away with shame and even blushes if they chance to look up suddenly and catch me listening. Yet who of us has not secret regions of soul to which no friend is ever admitted, and which we ourselves shrink from full consciousness of? Many children half-believe the doll feels cold or blows, that it pains flowers to tear or burn them, or that in summer when the tree is alive it makes it ache to pound or chop it. Of 48 children questioned 20 believed sun, moon, or stars to live, 15 thought a doll, and 16 thought flowers would suffer pain if burned. Children who are accounted dull in school-work are more apt to be imaginative and animistic.

Children's Fancies—The Sky.—The chief field for such fond and often secret childish fancies is the sky. About three fourths of all questioned thought the world a plain, and many described it as round like a dollar, while the ky is like a flattened bowl turned over it. The sky i often *thin*, one might *easily break through;* half the moon may be seen through it, while the other half is this side; it may be *made of snow*, but is so large that there is *much floor-sweeping* to be done in heaven.

The Sun.—Some thought *the sun went down at night into the ground* or just behind certain houses, and went across, on, or under the ground to *go up, out of*, or *off the water* in the morning; but 48 per cent of all thought that at night it *goes* or *rolls* or *flies*, is *blown* or *walks*, or *God pulls it up* higher out of sight. He *takes it into heaven*, and perhaps *puts it to bed*, and even *takes off its clothes* and puts them on in the morning, or again it *lies under the trees*, where the angels *mind it*, or goes through and *shines on the upper side of the sky*, or goes *into* or *behind the moon*, as the moon is behind it in the day. It may *stay where it is*, only we *cannot see it; for it is dark*, or the *dark rains down so*, and it *comes out when it gets light so it can see.* More than half the children questioned conceived the sun as never more than 40 degrees from the zenith, and, naturally enough, city children knew little of the horizon.

The Moon.—So the moon (still italicizing where the exact words of the children are given) *comes around when it is a bright night* and people *want to walk*, or *forget to light some lamps;* it *follows us about* and has nose and eyes, while it *calls the stars into, under*, or *behind* it at night, and they may be *made of bits of it.* Sometimes the moon is *round a month or two;* then it is a *rim*, or a *piece is cut off*, or it is *half-stuck* or *half-buttoned into* the sky. The stars may be *sparks from fire-engines* or houses, or with higher intelligence, they are silver, or *God lights them with matches* and blows them out or opens the *door* and calls them in in the morning. Only in a single case were any of the heavenly bodies conceived as openings in the sky to let light or glory through, or as eyes of supernatural beings—a fancy so often ascribed to children and so often found in juvenile literature.

Thunder and Lightning.—Thunder, which, anthropologists tell us, is or represents the highest God to most savage races, was apperceived as God *groaning* or *kicking*, or *rolling barrels about*, or *turning a big handle*, or *grinding snow, walking loud, breaking something, throwing logs, having coal run in, pounding about* with a *big hammer, rattling houses, hitting the clouds*, or clouds *bumping* or *clapping* together or *bursting*, or else it was merely *ice sliding off lots of houses*, or *cannon in the city* or sky, hard *rain down the chimney*, or *big rocks pounding*, or *piles of boards falling down*, or very hard rain, hail or wind. Lightning is God *putting out His finger* or *opening a door*, or *turning a gas quick*, or (very common) *striking many matches at once*, throwing *stones and iron for sparks, setting paper afire*, or it is light going outside and inside the sky, or stars falling.

Clouds and Rain.—God keeps rain in heaven in a *big sink, rows of buckets*, a *big tub* or *barrels*, and they *run over* or he *lets it down* with a *water-hose*, through a *sieve*, a *dipper with holes*, or *sprinkles* or *tips* it down or *turns a faucet*. God makes it in heaven out of nothing or out of water, or gets it up by *splashing up*, or he *dips it up off the roof*, or it *rains up off the ground when we don't see it*. The clouds are *close to the sky*; they move because the *earth moves and makes them*. They are *dirty, muddy things*, or *blankets*, or *doors of heaven*, and are made of fog, of *steam that makes the sun go*, of smoke, of *white wool* or *feathers and birds*, or lace or cloth. In *their changing* forms very m[illegible]en, whose very life is fancy, think they see veritable men, or more commonly, because they have so many more forms, animals' faces, and very often God, Santa Claus, angels, etc., are also seen. Closely connected with the above are the religious concepts so common with children.

God and Heaven.—God is a *big*, perhaps *blue man*, very often seen in the sky, on or in the clouds, in the church, or even street. He *came in our gate, comes to see us sometimes.* He lives in a *big palace*, or a big *brick* or *stone house on the sky.* He makes lamps, babies, dogs, trees, money, etc., and the angels *work for him.* He looks like the priest, Fröbel, papa, etc., and they like to look at him, and a few would like to be God. He *lights the stars so he can see to go on the sidewalk* or *into the church.* Birds, children, Santa Claus, live with him, and most but not all like him better than they do the latter. When people die they just *go*, or are *put in a hole*, or a box or a *black wagon that goes to heaven*, or they *fly up* or are *drawn* or *slung* up into the sky where God *catches* them. They *never can get out of the hole*, and yet all good people somehow get where God is. He *lifts* them up, they *go up on a ladder or rope*, or they carry them up, but *keep their eyes shut so they do not know the way*, or they are *shoved up through a hole.* When children get there they have candy, rocking-horses, guns, and everything in the toy-shop or picture-book, play marbles, top, ball, cards, hookey, hear brass bands, have nice clothes, gold watches, and pets, ice-cream and soda-water, and no school. There are men who died in the war made into angels, and dolls with broken heads go there. Some think they must go through the church to get there; a few thought the horse-*cars run there*, and one said that the birds that grow on *apple-trees are drawn up* there by the moon. The bad place is like an *oven* or a *police-station,* where it burns yet is all dark, and folks want to get back, and God *kills* people or *beats them with a cane.* God makes babies in heaven, though the holy mother and even Santa Claus make some. He *lets them down or drops them,* and the women or doctors *catch* them, or he leaves them on the sidewalk, or *brings them down a wooden ladder backwards and pulls it up again,* or mamma or the doctor or the nurse *go up and fetch them* sometimes *in a balloon,* or they *fly down and lose off their wings in some place or other and forget it,* or *jump down to Jesus,* who *gives them around.* They were also often said to be found in flour-barrels, and the *flour sticks ever so long you know,* or they *grow in cabbages,* or God *puts them in water,* perhaps *in the sewer,* and the doctor gets them out and *takes them to sick folks that want them,* or the milkman brings them early in the morning, they are dug out of the ground, or bought at the baby-store. Sometimes God *puts on a few things* or else *sends them along if he don't forget it;* this shows that no one since Basedow believes in telling children the truth in all things.

Such Fancies Dim, Timid, and Changing.—Not many children have or can be made to disclose many such ideas as the above, and indeed they seem to be generally already on the ebb of this age, and are sometimes timidly introduced by, *as if, some say,* it is *like,* or *I used to think.* Clear and confident notions on the above topics are the exception and not the rule, yet most have some of them, while some are common to many, indeed to most, children. They represent a drift of consentient infantile philosophy about the universe not without systematic coherence, although intimidated and broken through at every point by fragmentary truths, often only verbal indeed, without insight or realization of a higher order, so that the most diametrical contradictions often subsist peacefully side by side, and yet they are ever forming again at lower levels of age and intelligence. In all that is remote the real and ideal fade into each other like clouds and mountains in the horizon, or as poetry, which keeps alive the standpoints of an earlier culture, coexists with science. Children are often hardly conscious of them at all, and the very questions that bring them to mind and invite them to words at the same time often abash the child to the first disquieting self-consciousness of the absurdity of his fond fancies that have felt not only life but character in natural objects. Between the products of childish spontaneity, where the unmistakable child's mark is seen, and those of really *happy* suggestion by parents, etc., the distinction is as hard as anywhere along the line between heredity and tradition. It is enough that these fancies are like Galton's composite portraits, resultants in form and shading of the manifold deepest impressions which what is within and what is without have together made upon the child's soul in these spheres of ideas.

They Represent Ever-changing Grades of Culture.—Those indicated above represent many strata of intelligence up through which the mind is passing very rapidly and with quite radical transformations. Each stratum was once, with but a little elaboration, or is now somewhere, the highest culture, relegated to and arrested in an earlier stage as civilization and educational methods advance. Belief in the false is as necessary as it is inevitable in children for the proper balance of head *and heart,* and happy the child who has believed or *loved only* healthy, unaffected, platonic lies like above, which will be shed with its milk-teeth when more solid mental pabulum can be digested. It is possible that the present shall be so attractive and preoccupying that the child never once sends his thoughts to the remote in time and place, and these baby-fancies—ever ready to form at a touch, which make the impartation of truth, however carefully put, on these themes impossible before its time; which, when long forgotten, yet often reverberate, if their old chords be struck in adults, to the intensity of fanaticism or even delusion—shall be quite repressed. If so, one of the best elements of education which comes from long experience in laying aside a lower for a higher phase of culture by doubting opportunely, judiciously, and temperately, is lost.

Childish Thought Largely in Terms of Sight.—De Quincey's pseudopia is thought by Dr. E. H. Clarke (Visions, p. 212) to be common with children; but although about 40 were asked to describe what they saw with their eyes shut, it is impossible to judge whether they visualize in any such distinctive sense as Mr. Galton has described, or only imagine and remember, often with Homeric circumstance, but with less picturesque vividness. Childish thought is very largely in visual terms; hence the need of object (Anschauungs) lessons, and hence, too, it comes that most of the above questions address the eye without any such intent. If phonic symbols could be made pictorial, as they were originally, and as illustrated primers made them in a third and still remoter sense, the irrational elements in learning to read would be largely obviated.

Sensations of Sound Referred to Color.—Again, out of 53 children 21 descri[illegible] tones of certain instruments as colored.[1] The colors, or "photisms," thus suggested, though so far as tested constant from week to week in the same child, had no agreement for different instruments, a drum, e.g., suggesting yellow (the favorite color of children) to one child and black or red to another, and the tone of a fife being described as pale or bright, light or dark colored, intensity and saturation varying greatly with different children. For this and other forms of association or analogies of sensations of a large and not yet explored class so common in children, many data for future study were gathered. This was also the case with their powers of time and tone reproduction, and their common errors in articulation, which have suggested other and more detailed researches, some of which are already in progress.

Ideas of Right and Wrong—The Latter much more Distinct.—Each child was asked to name three things right and three things wrong to do, and nearly half could do so. In no case were the two confused, indicating not necessarily intuitive perception, but a general consensus in what is allowed and forbidden children at home, and how much better and more surely they learn to do than to know. Wrong things were specified much more readily and by more children than right things, and also in much greater variety. In about 450 answers 53 wrong acts are specified, while in over 350 answers only 34 different good acts are named. The more frequent answers are to mind and be good, or to disobey, be naughty, lie, and say bad words; but the answers of the girls differ from the boys in two marked ways; they more often name specific acts and nearly twice as often conventional ones, the former difference being most common in naming right, the latter in naming wrong things. Boys say it is wrong to steal, fight, kick, break windows, get drunk, stick pins into others, or to "sass," "cuss," shoot them, while girls are more apt to say it is wrong not to comb the hair, to get butter on the dress, climb trees, unfold the hands, cry, catch flies, etc. The right things seem, it must be confessed, comparatively very tame and unattractive, and while the genius of an Aristotle could hardly extract categories or infer intuitions by classifications from either list, it is very manifest that the lower strata of conscience are dislike of dirt and fear. Pure intuitionalists may like to know that over a dozen children were found who convinced their questioners that they thought they ought not to say bad words if no one heard them, or lie if not found out, etc., or who felt sick at the stomach when they had been bad, but the soap and water or sand with which their mouths are sometimes washed after bad words in kindergartens, or the red pepper administered at home after lies, may possibly have something to do with the latter phenomenon.

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[1] *In the sense* of Bleuler and Lehmann. See their treatise "*Zwangmässige* Lichtempfindung durch Schall," Leipzig, 1881. *Also,* Lazarus' "Leben der Seele," II., p. 131.

Drawings Illustrating Development of Observation and of Sense of Form.—From several hundred drawings, with the name given them by the child written by the teacher the chief difference inferred is in concentration. Som make faint, hasty lines representing all the furniture o a room, or sky and stars, or all the objects they ca think of, while others concentrate upon a single objec It is a girl with buttons, a house with a keyhole or step man with a pipe o [illegible] ring grotesquely pro nent. The development of observation and sense of form is best seen in the pictures of men. The earliest and simplest representation is a round head, two eyes and legs. Later comes mouth, then nose, then hair, then ears. Arms like legs first grow directly from the head, rarely from the legs, and are seldom fingerless, though sometimes it is doubtful whether several arms or fingers from head and legs without arms are meant. Of 44 human heads only 9 are in profile. This is one of the many analogies with the rock and cave drawings of primitive man, and suggests how Catlin came to nearly lose his life by "leaving out the other half" in drawing a profile portrait of an Indian chief. Last, as least mobile and thus attracting least attention, comes the body; first round like the head, then elongated, sometimes prodigiously, and sometimes articulated into several compartments, and in three cases divided, the upper part of the figure being in one place and the lower in another. The mind, and not the eye alone, is addressed, for the body is drawn and then the clothes are drawn on it (as the child dresses), diaphanous and only in outline. Most draw living objects except the kindergarten children, who draw their patterns. More than two thirds of all objects are decidedly in action, and under 18 per cent are added word-pictures or scribbles called the *name* of the objects and made to imitate writing or letters, as children who cannot talk often make gibbering, sputtering sounds to imitate talking. The very earliest pencillings, commonly of three-year-old children, are mere marks to and fro, often nearly in the same line. Of 13 of these most were nearly in the angle described by Javal as corresponding to the earliest finger and fore-arm movements and not far from the regulation slant of 52° taught in school penmanship.

Reproduction of Stories, Showing Considerable Power of Abstraction.—Each child was asked to tell a verse or story to be recorded verbatim, and nearly half could do so. Children of this age are no longer interested in mere animal noises or rhymes or nonsense-words of the "Mother Goose" order, but everything to interest them deeply must have a cat, dog, bird, baby, another child, or possibly parent or teacher in it; must be dramatic and full of action, appeal to the eye as a "chalk-talk" or an object-lesson, and be copious of details, which need be varied but slightly to make the story as good as new for the twentieth time. A long gradation of abstractions culminates here. First, it is a great lesson for the child to eliminate touch and recognize objects by the eye alone. The first good pictures mentally seen are felt of, turned over with much confusion to find the surface smooth. To abstract from visual terms to words is still harder. Eyes and tongue must work together a long time before the former can be eliminated and stories told of objects first absent, then remote, then before unknown. Children must be far beyond this before they can be interested, e. g., in fairly tales, and stories told interest them far more than if read to them, no matter how apt the language. They are reproduced about as imperfectly as objects are drawn, only a few salient and disconnected points being seized at first, and sentence and sequence coming very slowly after many repetitions. Their own little faults may be woven in or ascribed to animals or even plants in a remote way which they themselves will feel at each stage, and the selfish birdie or the runaway squirrel or flowers as kind words may be referred to in case of need as a reserve moral capital. Why do we never teach maxims and proverbs which, when carefully selected, are found so effective at this age and teach the best morality embodied in the briefest and most impressive way?

Ideas of Money.—Of the 36 per cent or 72 children of the table who never saved their pennies, 52 spend them for candy, which growing children need, but the adulterations of which are often noxious. Of toys, big things please them best. A recent writer in Austria fears that school savings-banks tend to call attention too early to money matters, and to cause its value to be dangerously overrated; but to pass the candy by and drop the cents where they are beyond their control for years is much less pedagogic than to save them till a larger and more costly toy can be bought.

Tests to Find Basis of First School Instruction—Development, not Acquisition.—The next experimental inquiry[1] in the field was also made in quest of a natural basis of the first school instruction. If we look at the developing effect upon the person of the pupil, progress in the upper gymnasial classes is perhaps less than in the first year of school, although, if we regard the quantity of acquisition or its importance, it is much greater. That the matter of instruction is preferred to the development of the person of the pupil is the cause of the memory-cram and neglect of pedagogy, which often makes school-keeping, as Grimm called it, lower than the work of the day laborer. Herbart, Ziller, and Stoy, however, plead for "educating instruction," and showed will to be rooted in the sphere of thought, which should first be moral and religious. Many-sided interest is the root and key of all. Interest may be of knowledge or of perception, and statistical inquiry might seek to determine which class of interests predominate, and whether reproduction was slow, confused, partial, or the reverse. The Berlin tables showed what ideas were lacking, but Lange sought the ideas that were not lacking as a basis of school knowledge. The child's soul is no *tabula rasa*, and very suggestive are papers on the best methods of excursions for city schools, on the educational value and use of home and its environment and apperception.

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[1] *Die Analyse* des Kindlichen Gedankenkreise
mann. Annaberg, 1890, p. 116.

Tests in Annaberg Schools to Determine Natural Basis of Two First Years' Course.—Hartmann's tests were made solely, he says, in the interests of the Annaberg schools, to determine the natural basis of the course of study there for the first year or two of school. The 14 plainer questions were not enough, and he had not heard of the Boston tests, and so those of Berlin were largely his model. His tests were better than all others in one respect, viz., they were repeated five years, 1880–84, on as many groups of children entering school, and they have given rise to analogous tests in other cities, best perhaps in Döbeln. For Hartmann's purpose a large number of questions were needed, and interests of knowledge must be regarded more than those of sympathy or participation. To an Herbartian the former seems earlier and richer, but the ideal of normalizing a sphere of thought is evident. Concepts likely to be wanting in children of that town were excluded in favor of those easily accessible to every child, yet those chosen were not model or normal in the sense that often others as good might not have been chosen. The flying, singing lark may be seen every day in spring at Annaberg, and if it has not been noticed, the child may be inert and indifferent, or its senses dull or defective, and this would also be the inference had the swallow been chosen. By this method each locality will find objects especially prominent and peculiar to it. A book by E. Piltz, entitled "School-children's Observation of Nature," and Sigismund's "The Family as a School of Nature," contain good lists of topics (the former 700 of them) and reports from similar tests. As a manufacturing centre of passementerie, and a shire town and retail centre, Annaberg has rich and poor, and its prosperity depends on changes in fashions, so that the 265 children entering its schools yearly differ greatly. Some children were very bashful on first entering school, used to only the local dialect, which most teachers did not speak, but by beginning with the easiest questions and talking of parents and toys, these difficulties were minimized. Thus answers were often enigmatical, and much cross and indirect questioning was required before the dash which signified knowledge on the point, or the plus sign which signified its absence, could be made. In all 1312 children, 660 boys and 652 girls, were tested, all between 6¾ and 5¾ years old, the tests being made before and after regular school-hours, by the teacher, who worked with small groups and made them answer individually when possible.

The table below reads as follows: out of 660 boys entering schools in Annaberg, 1881–4, 126, or 19 per cent, had seen a wild hare, etc.

Percentage of Knowledge of 100 Familiar Objects Arranged in Groups.

No. Object.	660 Boys.	652 Girls.	1312 in all.	Percentages.		
				Boys.	Girls.	Sum.
1. Hare,	126	81	207	19	12	16
2. Squirrel,	99	69	168	15	10	13
3. Flock of sheep,	235	198	433	36	30	33
4. Starling,	85	68	153	13	10	12
5. Goose,	272	250	522	41	38	40
6. Hen,	195	178	373	30	27	28
7. Cuckoo,	69	88	157	10	13	12
8. Lark,	76	83	159	12	13	12
9. Frog,	188	126	314	29	19	24
10. Fish,	141	122	263	21	19	20
11. Bee,	75	46	121	11	7	9
12. Butterfly,	287	362	649	44	55	49
13. Snail,	210	201	411	32	31	31
14. Birch,	33	10	43	5	2	3
15. Pine,	145	148	293	22	23	22
16. Acorn,	17	11	28	3	2	2
17. Cherry-tree,	83	138	221	13	21	17
18. Apple-tree,	208	219	427	31	34	33
19. Hazel-nut,	78	42	120	12	6	9
20. Flowers,	322	317	639	49	49	49
21. Whortleberry,	158	193	351	24	29	27
22. Moss,	130	107	237	20	16	18
23. Mushroom,	113	165	278	17	25	21
24. Sandpit,	58	37	95	9	6	7
25. Quarry,	121	105	226	18	16	17
26. Mine,	41	33	74	6	5	6
27. Tempest,	363	424	787	55	65	59
28. Fog,	186	246	432	28	38	33
29. Clouds,	266	293	559	40	45	42
30. Hailstones,	307	315	622	46	48	47
31. Rainbow.	226	264	490	34	40	37
32. Evening sky,	119	166	285	18	25	22
33. Sunset,	82	77	159	12	12	12
34. Phases of moon,	148	223	371	22	34	28
35. Starry sky,	349	466	815	53	71	62
36. Clock (time),	27	18	45	4	3	3
37. Days of week,	54	92	146	8	14	11
38. Seasons,	37	64	101	6	10	8
39. Constellations,	4	1	5	1	0	1
40. Dwelling,	543	503	1046	82	77	80
41. Zürcher Sq.,	346	328	674	52	50	51
42. Chief market,	471	452	923	71	69	7

No.	Object.	660 Boys.	652 Girls.	1312 in all.	Percentages. Boys.	Percentages. Girls.	Percentages. Sum.
43.	Buchholzer St.,	278	281	559	42	43	43
44.	Real Gymnasium,	133	164	297	20	25	23
45.	Berg church,	210	220	430	32	34	33
46.	Catholic church,	231	237	468	35	36	36
47.	Town Hall,	430	403	833	65	62	63
48.	Post-office,	297	344	641	45	53	49
49.	R. R. station,	418	433	851	63	66	65
50	Bahls Restaurant,	167	189	356	25	29	27
51.	Nursery-tree,	163	180	343	25	27	26
52.	Markus-Röhling (an old mine),	193	267	460	29	41	35
53.	Promenade,	228	292	520	35	45	40
54.	Grove,	172	253	425	26	39	32
55.	Church-yard,	394	469	863	60	72	66
56.	Pöhlberg,	217	244	461	33	37	35
57.	Galgenberg,	89	89	178	13	13	13
58.	Schreckenberg,	117	112	229	18	17	17
59.	Buchheltz,	282	329	611	43	50	47
60.	Frohnau,	164	226	390	25	35	30
61.	Wiesenbad,	121	159	280	18	24	21
62.	Geyersdorf,	139	200	339	21	31	26
63.	Valley,	51	59	110	8	9	8
64.	River,	150	157	307	23	24	23
65.	Bridge,	282	258	540	43	39	41
66	Water-mills,	152	151	303	23	23	23
67.	Pond,	434	490	924	66	75	70
68.	Meadow,	250	218	468	38	33	36
69.	Corn-field,	183	111	294	28	17	22
70.	Potato-field,	345	358	703	52	55	54
71	Snow landscape,	289	262	551	44	40	42
72.	Village,	158	175	333	24	27	25
73.	Soldiers' monument,	180	136	316	27	21	24
74.	Fountain,	397	394	791	60	60	60
75.	Carriage driving,	332	362	694	50	55	53
76.	Road,	300	346	646	45	53	49
77.	Field-works,	250	181	431	38	28	33
78.	Garden-works,	213	211	424	32	32	32
79.	Acute-angled triangle,	62	66	128	9	10	10
80.	Square,	101	90	191	15	14	15
81.	Cube,	214	293	507	32	45	39
82.	Circle,	280	284	564	42	43	43
83.	Sphere or globe,	546	510	1056	83	78	80
84.	*Counting from 1 to 10,*	456	405	861	69	62	66
85.	*God,*	370	401	771	56	61	
86.	*Jesus,*	68	142	210	10	22	

No. OBJECT.	660 Boys.	652 Girls.	1312 In all.	PERCENTAGES. Boys.	Girls.	Sum.
87. Bible history, ...	7	14	21	1	2	2
88. Prayers and Songs, .	122	184	306	28	28	23
89. Divine service, ...	192	223	415	19	34	32
90. Baptism, ...	118	228	346	18	35	26
91. Wedding, ...	70	227	297	11	35	23
92. Father's name and station, ...	425	370	795	64	57	61
93. King, ...	52	42	94	8	6	7
94. Coins, ...	450	398	848	68	61	65
95. Sickness, ...	356	406	762	54	62	58
96. Fairy tales, ...	32	39	71	5	6	5
97. Repetition in speaking,	480	426	906	73	65	69
98. Recitation, ...	68	62	130	10	9	10
99. Repetition in singing,	226	243	469	34	37	36
100. To sing songs, . . .	102	161	263	15	25	20

By Inspection of Results, the Mental Ability of Each Child can be Predicted.—The objects, it will be observed, are here arranged in groups as follows: Animals 1–13, plants 14–23, mineral 24–26, events in nature 27–35, time 36–39, localities 40–51, the home landscape 52–78, mathematical 79–84, religious 85–91, social 94–94, miscellaneous 95–100. Of the children tested the first year the individual record of a few was followed and given with detail. A boy who passed on 75 out of the 100 showed an excellent record each year. He had a large vocabulary, yet would repeat a story with fidelity to the words it was told in that was almost servile. He was better in sharp thought than in fantasy. A girl was deficient in all groups and almost zero in some, having only 41 per cent of the questions, and a boy had but 12 of the 100 usable concepts. The school-marks and the carefully kept individuality-books in these and other cases corresponded very nearly to the efficiency shown *in the preliminary* tests. Not only do the latter *harmonize with following* school-years, but Hartma *thinks that from a* [illegible] inspection of the results each group into which the 100 questions fall the mental ability if not the future career of the child can be predicted. What shall be said, he adds, of the waste of the general public school in which all three of these children are taught side by side in the same class?

Proofs of the Value of these Tests to Determine Individuality.—In this inventory great stress was laid upon the natural setting of each object. The questioners were told that it was not sufficient to have seen, but they must have ridden on the cars, the apple-tree must have had apples on it, the butterfly must have been on the flower, the sheep grazing, the frog springing, etc. One of these concepts was known to but five, and one to 1056 of the 1312 children, and the others were between these extremes. In animals, minerals, and the social group only did boys excel. Girls excelled in 56 and boys in 38 objects. Girls excelled the boys in their marks also in the first, second, and third school-year, but less and less, till in the sixth year the boys were distinctly ahead. Again, on entering the usual elementary school, each boy had on the average 30.7 of the 100 concepts, and each girl 36.7. At the end of the first school-year the boys had an average mark of progress of 3.03, and each girl 2.53. Thus we can form the proportion, $36.7 : 30.7 = 30.3 : x$, which gives, as the value of its fourth term, 2.535, which varies only 0.005 from the actual mark of the girls. For each of the next three years the deviation is hardly greater. The product of the number of concepts multiplied by the chief school-mark in Germany which designates progress comes out about the same in girls' as in boys' classes. Out of the *100 usable* concepts the average girl had 32.9, the average *boy* 30.8. The average Annaberg number, 31.9, thus small. So valuable were these tests for determining the individuality of the child, for the program and for the teachers that at Easter either the entire hundred, or at least the best 30 questions, are tested each year. These are the following: hare, hen, frog, butterfly, fir-tree, flower, thunderstorm, rainbow, moon-phases, days of the week, child's home, city-hall, railway station, potato-field, snow landscape, cube, numbers, work in the field, baptism, coins, sickness, God, Jesus, and localities. In the practice school of the Pedagogical Seminary at Jena, each school-year begins with this analysis of the children's sphere of thought.

The Use of Stories to Develop Apperception.—The complete course of study for the first and second school-year based upon his inquest the author reserves for a later pamphlet, and gives here only an outline of his ideas. Nothing fulfils all the conditions of Herbartian interest at first better than Bible stories; but only 25 per cent of the children have usable Bible concepts, and their apperceptive organs are hardly developed enough to make this fruitful. *Genuine* child stories, according to Willmann, must have five marks, viz., they must be really child-like or simple and full of fancy, they must excite and educate the mental judgment, must be instructive and of permanent worth, they must make a deep unitary impression which shall be a centre of future interest. It must thus be popular and classical. Hartmann thanks God that this demand can be met by the Grimm *Märchen.* Since Ziller's first plea for Märchen in school nearly a quarter of a century ago, the *battle about* them has raged. Hartmann disagrees with *Ziller and Rein in thinking* that four of these are enough *for the first school-year,* [illegible] feed all the Herbartian interests. The *Star Dollars,* which teaches that although all desert the child there is *One* that does not, comes last. Rein is charged with selecting his twelve tales arbitrarily, without the justification which only such a preliminary inquest can give, or else for external reasons, as basis for instruction in natural history, etc. Hartmann's limited use of *Märchen* should not only educate religious and other sentiments, but it should teach to apprehend and to tell again.

Bible Stories Best.—After this practice for half a year Bible stories should come. The New Testament should precede the Old, and all should centre about the Jesus child. To fail of insuring close intimacy with Bible tales in early childhood is, we are told, one of the gravest of all pedagogical errors. The topic of this half-year should be the nativity, the visit of the three wise men, Jesus in the temple, the wedding at Cana, the boy at Nain, the entrance to Jerusalem, the arrest of Jesus, his condemnation, death, and burial. This plan has been followed in close connection with the church-year in Annaberg, and with the best results. Even for narrative and educational values this has excelled all other material. This matter must be so treated as to evoke the greatest interest and participation, and never at the same part of the year as the *Märchen.* Religious instruction should thus be the chief and central. It should select the matter and all it requires without reference to other branches, and in this sense only they should all be subordinate to it. The last sixteen pages are given to an outline or program for each of the 40 full school-weeks of the German school-year. This is divided as narrative matter and object-lesson matter. The first begins with a brief prayer and song, the

Märchen in the third week, and new and longer songs, prayers and tales, then proverbs and poems with Bible tales the last half-year. The second begins with name, place in school, time, school-days, movements, with use of slate, sponge and pencil in the second week, each child's home, street, parents' name, home-life, fence, hedge, flowers, animals and birds seen on the way, garden tools, planting and sowing, riddles, drawing, then writing and reckoning, etc. Every object in the table is gone over with detail and many more. They draw dog-houses, bird-cages, mouse-trap, spider's web, hat, lamp, stove, moon, star, cat, dish, sled, church, altar, Christmas-tree, knife and fork, wine-bottle and glass, bed, tea-cup and pot, hat, cap, gravestone, street-lamp, city-hall, book-case, slate, etc.

runaway squirrel or flowers as kind words may be referred to in case of need as a reserve moral capital. Why do we never teach maxims and proverbs which, when carefully selected, are found so effective at this age and teach the best morality embodied in the briefest and most impressive way?

Ideas of Money.—Of the 36 per cent or 72 children of the table who never saved their pennies, 52 spend them for candy, which growing children need, but the adulterations of which are often noxious. Of toys, big things please them best. A recent writer in Austria fears that school savings-banks tend to call attention too early to money matters, and to cause its value to be dangerously overrated; but to pass the candy by and drop the cents where they are beyond their control for years is much less pedagogic than to save them till a larger and more costly toy can be bought.

Tests to Find Basis of First School Instruction—Development, not Acquisition.—The next experimental inquiry[1] in the field was also made in quest of a natural basis of the first school instruction. If we look at the developing effect upon the person of the pupil, progress in the upper gymnasial classes is perhaps less than in the first year of school, although, if we regard the quantity of acquisition or its importance, it is much greater. That the matter of instruction is preferred to the development of the person of the pupil is the cause of the memory-cram and neglect of pedagogy, which often makes school-keeping, as Grimm called it, lower than the work of the day laborer. Herbart, Ziller, and Stoy, however,

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[1] *Die Analyse* des Kindlichen Gedankenkreises, Dr. B. Hartmann. Annaberg, 1890, p. 116.

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